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(54) Battery cover

(57) The cover 4 of a storage battery 1 such as a storage battery for a car has integrally formed therein two housings 5 each of which extends across three cells of the battery. Each housing 5 has tightly fitted therein a venting device 6 comprising a surrounding wall 7, an inclined base 8 and a plurality of partitions 13, and 13c. The base 8, together with the housing 5 and the partitions 13, defines a plurality of chambers 9a connected to each other via slots 14 and connected to the cells of the battery via slots 10. Gas generated during use of the battery enters the chambers 9a via slots 10 and is vented to the atmosphere via a vent 11. Any electrolyte entrained in the gas entering the chambers 9a is caught by the partitions 13, and 13c, flows down the inclined base 8 and returns to the cells of the battery via the slots 10.

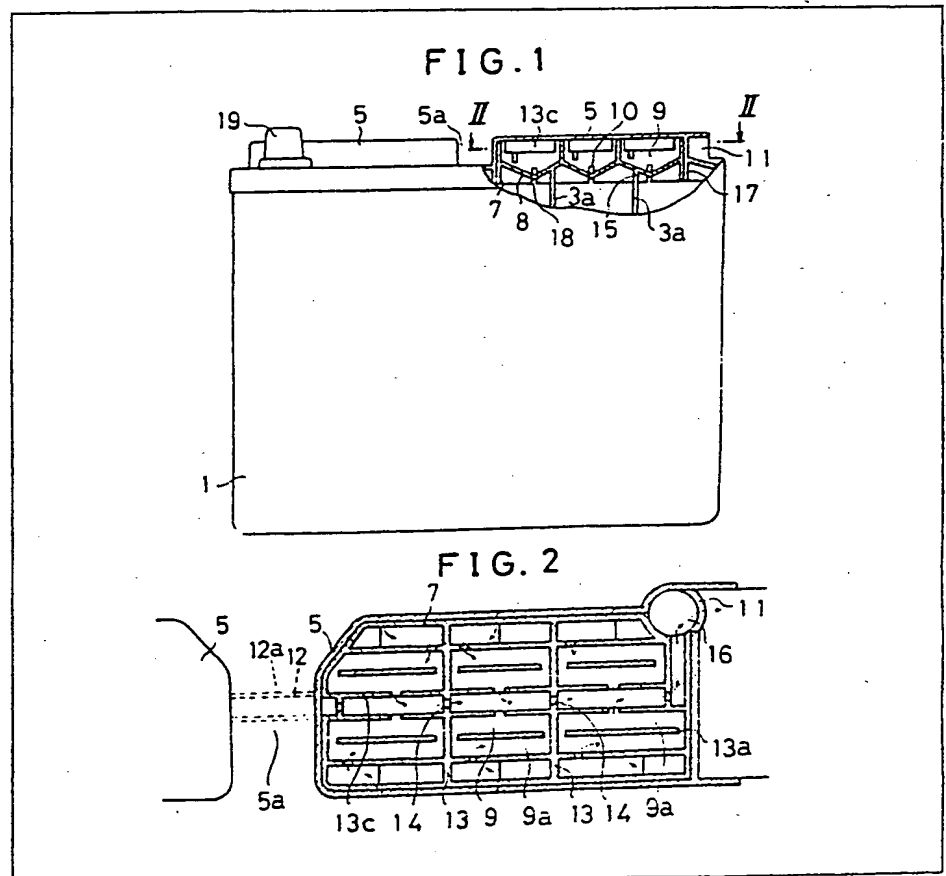


FIG. 1

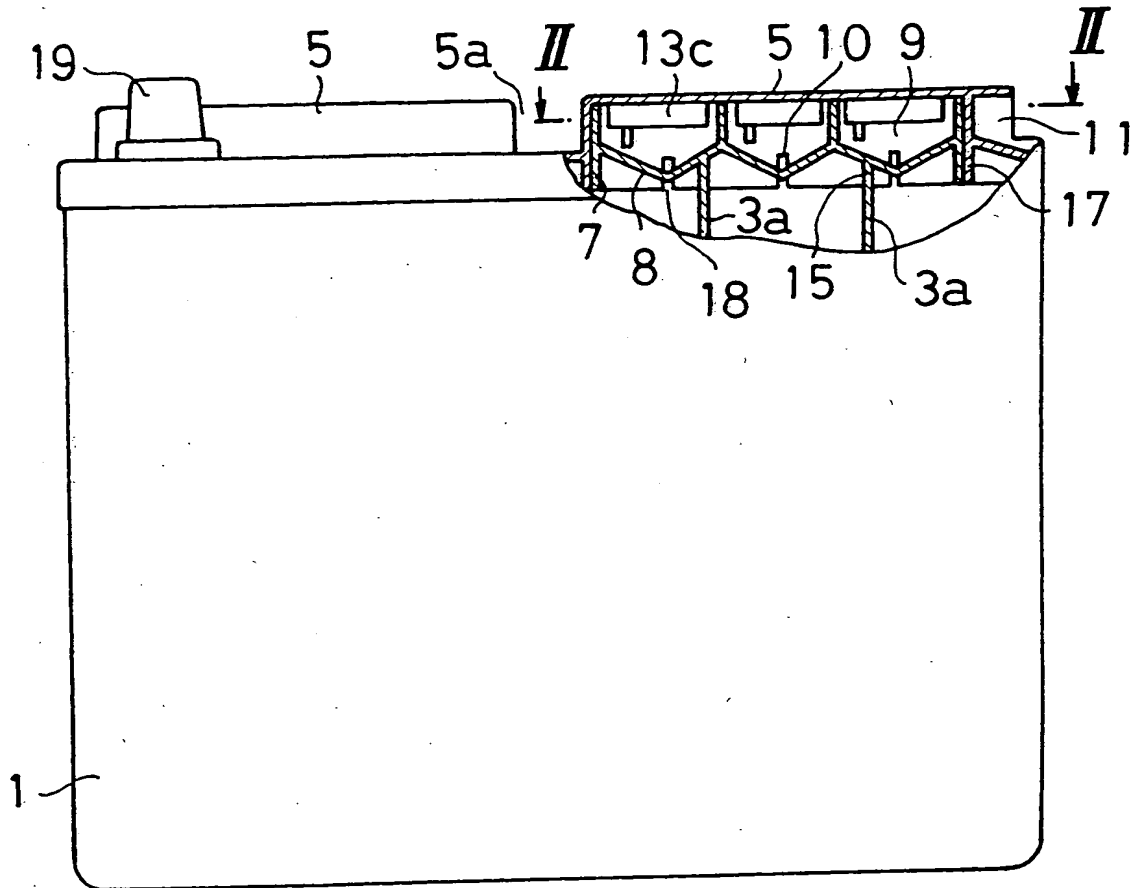


FIG. 2

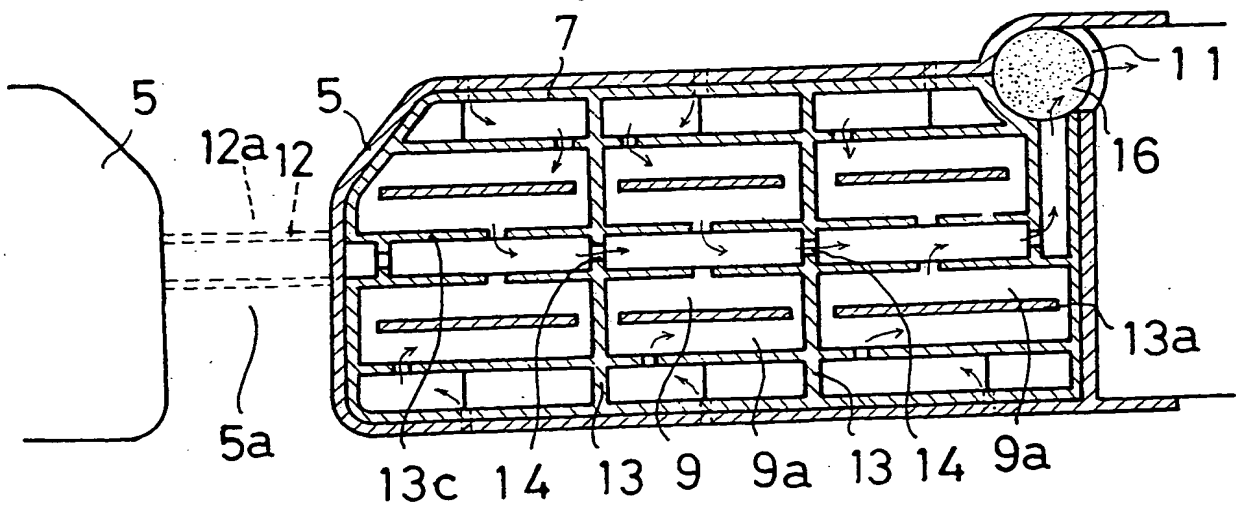


FIG. 3

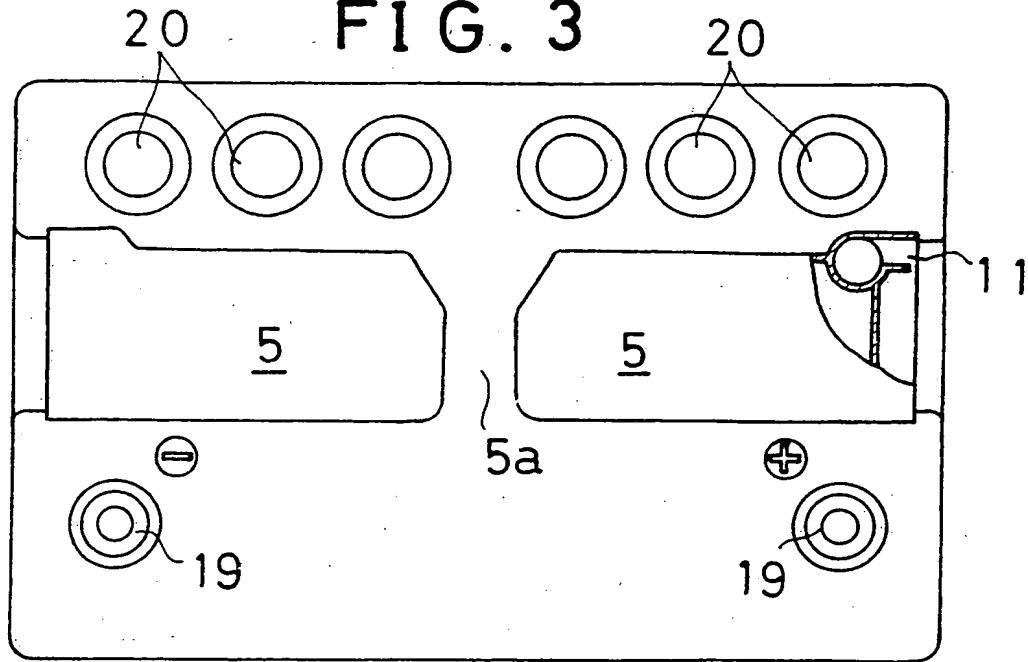


FIG. 4

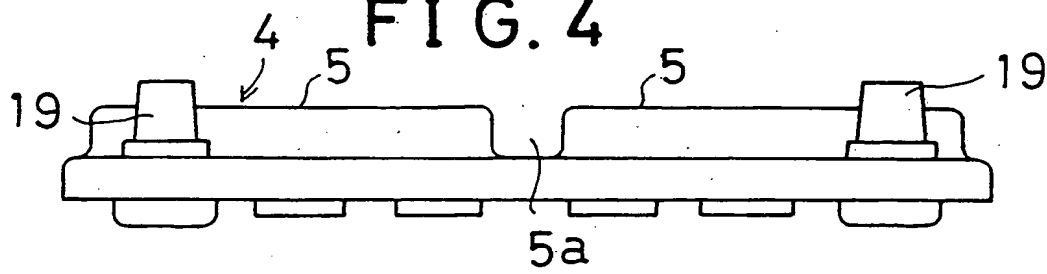


FIG. 5

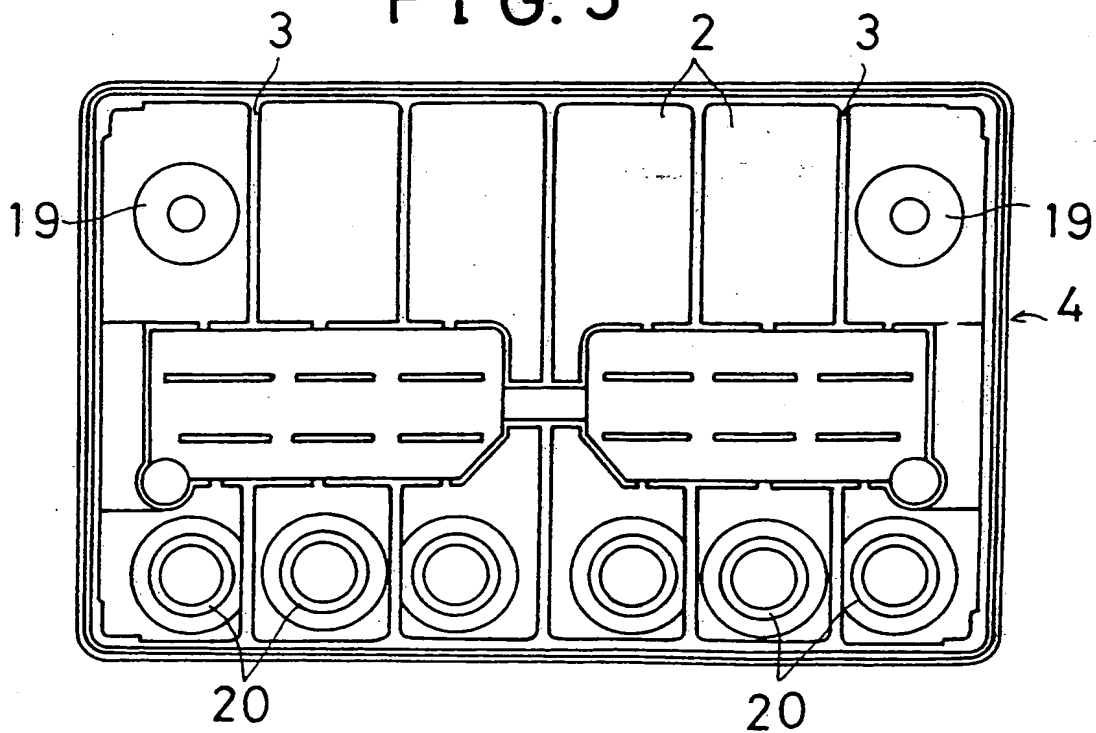
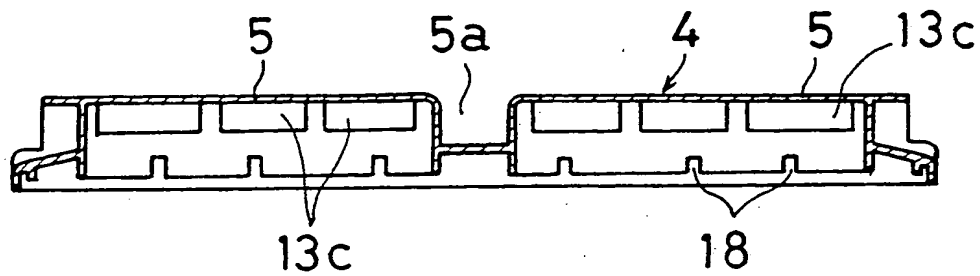


FIG. 6



**FIG. 7**

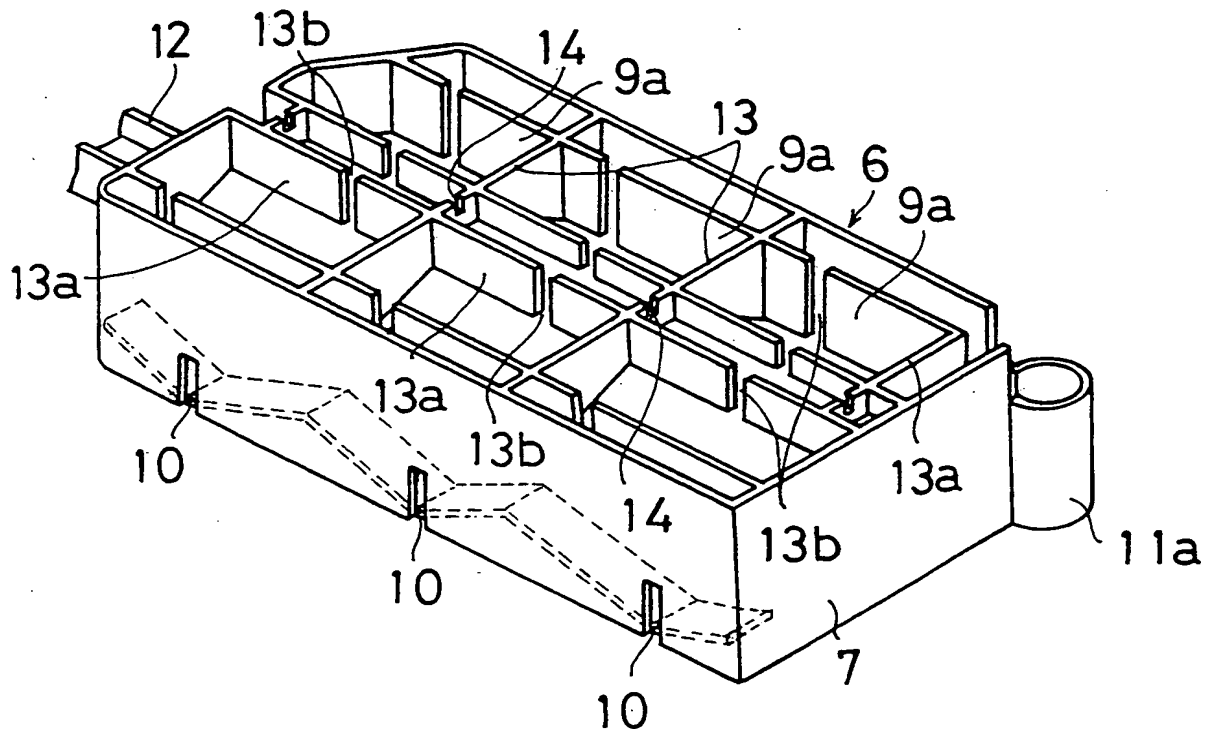
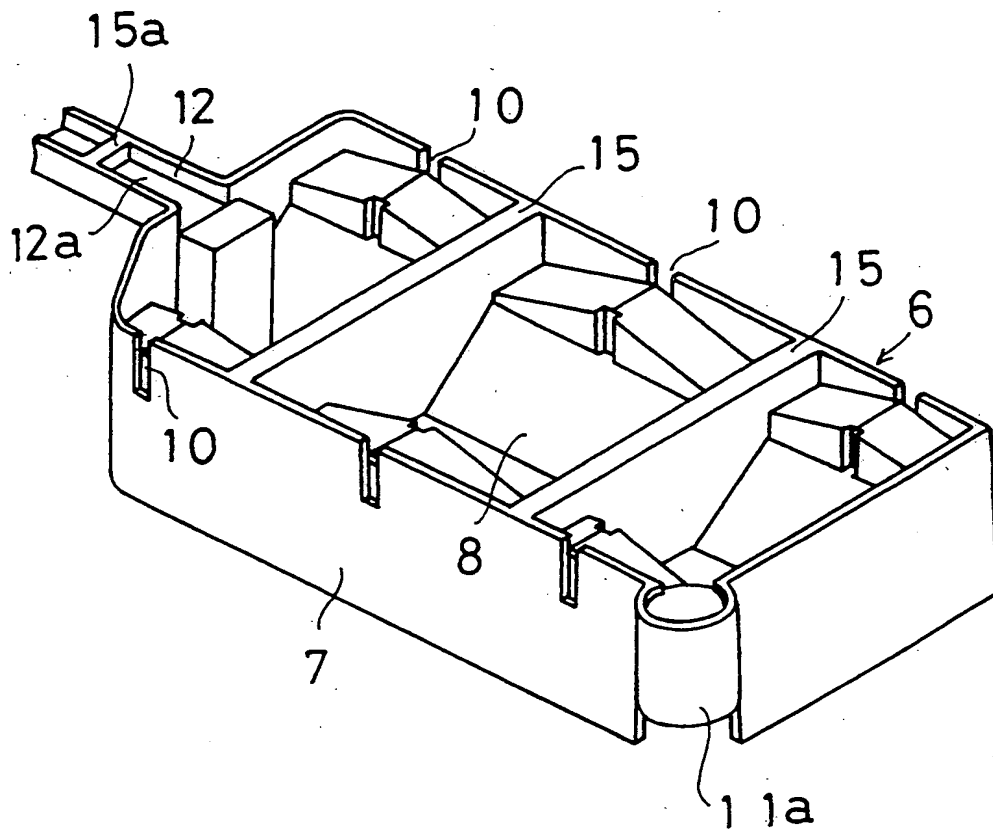


FIG. 8



## SPECIFICATION

### Cover for a storage battery

- 5 This invention relates to a cover for a storage battery such as a storage battery for a car.

There is known a storage battery having an exhaust housing projecting from the top of the battery cover in order to increase the effective volume of the interior of the battery. Usually, a channel-shaped frame serving as the exhaust housing and common to a plurality of cell chambers is connected to the top of cover. The frame has openings allowing communicating between the frame and the respective cell chambers, and an airtight connection thereof to the cover is effected by means of an adhesive agent or by means of heat sealing. Consequently, the manufacture thereof is troublesome, and the appearance is spoiled because the connection can be seen from outside. Additionally, leakage of electrolyte or gas often occurs due to insufficient connection.

According to the present invention, there is provided a cover for a storage battery, the underneath of the cover being partitioned by partition walls into a plurality of cell chambers and the cover having formed therein at least one housing extending over two or more adjacent cell chambers, the housing having mounted therein a venting device including a base which, with the housing, defines an exhaust chamber common to said adjacent cell chambers, the venting device being provided with means allowing communication between the exhaust chamber and the cell chambers, and the housing being provided with a vent for allowing gas generated during use of the battery to be vented to the atmosphere.

For a better understanding of the invention, reference will now be made, by way of example, to the accompanying drawings in which:

*Figure 1* is a side view, partly in section, of a battery provided with a cover of the invention;

*Figure 2* is a sectional view taken along line II-II of *Figure 1*;

*Figure 3* is a plan view from above of the cover of the battery shown in *Figure 1*;

*Figure 4* is a side view of the cover shown in *Figure 3*;

*Figure 5* is a plan view from below of the cover shown in *Figure 3*;

*Figure 6* is a sectional view from the side of the cover shown in *Figure 3*;

*Figure 7* is a perspective view from above of the venting device with which the cover shown in *Figures 3* to *6* is provided; and

*Figure 8* is a perspective view from below of the venting device shown in *Figure 7*.

Referring to the drawings, a cover 4, which is partitioned underneath by partition walls 3 into six cell chambers 2 and is adapted to be fitted onto a battery container 1, is provided with two housings 5, each of which extends across three of the cell chambers 2. A space 5a is left between the two housings in the centre of the cover 4. The left side of the cover is a mirror image of the right side of

the cover, and accordingly, only one side of the cover will be described in the following description.

The housings 5 are formed by swelling the cover 4 so that the housings 5 are integral with the cover 4. The housing 5 is provided with a vent 11. A venting device 6 is tightly fitted with the housing 5. The venting device 6 comprises (a) a surrounding wall 7 which is adapted to be fixedly mounted within the periphery of the housing 5, (b) transverse mist-catching partitions 13 having communication recesses 14 and dividing the space within the wall 7 into chambers 9a corresponding to the respective cell chambers 2, and (c) a base 8. The component parts of the venting device 6 are integrally formed by moulding. The venting device is fixedly mounted within the housing 5, simply by tight fitting or, if desired, by the use of an adhesive or heat sealing between the device 6 and the housing 5, whereby there is formed an exhaust chamber 9 defined by the housing 5 and the venting device 6. The venting device 6 may be modified by omission of the surrounding wall 7 or the mist-catching partitions 13.

The surrounding wall 7 is provided with communication slots 10 corresponding to the respective cell chambers 2. These communication slots 10 allow communication between the spaces above and below the base 8 (i.e. allow communication between the exhaust chamber 9 and the respective cell chamber 2). The base 8 is formed of inclined portions such that the highest point of the base 8 is at its centre, the inclined portions being inclined downwards towards the communication slots. Thus, any electrolyte in the exhaust chamber 9 will flow down the inclined portions and return to the cell chambers 2 through the communication slots 10.

The base 8 is provided on its underneath surface with partition walls 15 corresponding to and connectable to respective partition walls 3a of the container 1. The base 8 is provided, on its upper surface and in each chamber 9a, with subsidiary mist-catching partitions 13a extending laterally and longitudinally. These partitions 13a are provided with air gaps 13b, so that the exhaust gas may pass therethrough to an exhaust tube 11a formed in one end of the venting device 6, and discharge from the vent 11 connected thereto. Further mist-catching partitions 13c, projecting from the inner surface of the housing 5, are provided, and a gas filter 16 is provided in the exhaust tube 11a. A side wall 17, projecting downwards from the periphery of the housing 5, is provided and respective openings 18, overlapping the respective communication slots 10 in the wall 7, are formed in wall 17.

The two exhaust chambers 9 beneath the right and left sides of the cover 4 are in communication one with another via a passage 12a in a channel 12 integral with the venting device 6. Thus, if gas is prevented from discharging from one of the exhaust chambers 9, the gas in that chamber can pass through the passage 12a to the vent 11 in the other exhaust chamber. Thus, explosion by gas pressure can be prevented. A partition wall 15a is provided in the channel 12, this wall 15a corresponding to a partition wall in the battery container 1. The cover

is provided with two terminal posts 19, and six openings 20 for filling the cells with electrolyte.

The cover constructed as above is fitted in an air tight manner onto the battery container 1, as shown in Figure 7. During use thereof the gas generated in the cell chambers 2 passes into the exhaust chambers 9 through the respective communication slots 10 and discharges to the atmosphere through the respective vent 11, while the electrolyte mist contained in the gas is caught by the mist-catching partitions 13, 13a and 13c. The construction of the cover is such that leakage of electrolyte from battery is prevented. In addition, the cover has an attractive appearance, and the strength of the housing 5 is increased by the venting device 6. Additionally, the battery can be stably fixed by a fastening band which passes around the battery through the gap 5a.

## 20 CLAIMS

1. A cover for a storage battery, the underneath of the cover being partitioned by partition walls into a plurality of cell chambers and the cover having formed therein at least one housing extending over two or more adjacent cell chambers, the housing having mounted therein a venting device including a base which, with the housing, defines an exhaust chamber common to said adjacent cell chambers, the venting device being provided with means allowing communication between the exhaust chamber and the cell chambers, and the housing being provided with a vent for allowing gas generated during use of the battery to be vented to the atmosphere.

2. A cover as claimed in claim 1, wherein the cover has formed therein two of said housings each having mounted therein said venting device, each of the two venting devices including a channel interconnecting the two exhaust chambers of the two venting devices.

3. A cover as claimed in claim 1 or 2, wherein the or each venting device includes (a) a surrounding wall adapted to be mounted in the housing and (b) a plurality of mist-catching partitions within the exhaust chamber for catching any electrolyte entrained in the gas entering the exhaust chamber.

4. A storage battery provided with a cover as claimed in any of claims 1 to 3.

5. A cover for a storage battery, substantially as hereinbefore described with reference to, and as shown in, the accompanying drawings.

6. A storage battery, substantially as hereinbefore described with reference to, and as shown in, the accompanying drawings.

